

Abstract of the Invention

A system and method is disclosed for improving the safety of directionally sensitive medical and industrial applications, such as laser applications, and cutting or surfacing tools. A system of electromagnetic radiation safety beam emitters and detectors is used to prevent a user from directing or positioning an application device, such as an electromagnetic beam source or high-power water jet, to areas outside a predefined application area and also to prevent operation of an application beam should persons or objects intersect a security boundary. In a first preferred embodiment, one or more safety beam emitters are placed in or near a treatment area, and a "safety beam" produced by the emitter is preferably directed toward the preferred position of the source of the application beam. In a second preferred embodiment, the safety beam emitter(s) is directed toward the application area of the source, and the detectors detect radiation reflected from the application area.